Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 4/3/13 at 9:00 a.m.

Objective: Provide advice to the Water Operations Management Team (WOMT) and National Marine Fisheries Service (NMFS) on measures to reduce adverse effects from Delta operations of the Central Valley Project and the State Water Project on salmonids and green sturgeon. DOSS will work with other technical teams. DOSS notes and advice can be found at: http://www.swr.noaa.gov/ocap/doss.htm.

DWR: Kevin Reece, Andy Chu, Edmund Yu, Mike Ford
FWS: Roger Guinee, Leigh Bartoo, Craig Anderson
NMFS: Barbara Rocco, Bruce Oppenheim, Garwin Yip, Doug Hampton
Reclamation: Russ Yaworsky, Josh Israel
DFW: Bob Fujimura
SWRCB: Scott Ligare
EPA, USGS: not present

Agenda
1. Fish monitoring
2. Current operations
3. Operating to RPA IV.2.1 (San Joaquin River Inflow-to-Export Ratio)
4. Tisdale Annual Report 2010–2011

Action: DOSS will wait until the Tisdale report comes out to make a decision on whether to continue to use Tisdale as a monitoring site.

Update: DOSS received the Tisdale report last week and decided to provide an additional week to review it before discussing and deciding on whether to make the Tisdale monitoring site the permanent location of the additional monitoring location pursuant to the RPA. The discussion will be included on next week's agenda.

Fish Monitoring: The following table presents fish monitoring data. Unless otherwise noted, reported sizes are fork length. See also: http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm.

Location	Chipps Is. Midwater Trawl	Sacramento Trawls	Mossdale Kodiak Trawl	Tisdale RST	Beach Seines
Sample Date	3/25, 27	3/25, 27, 29	3/25, 27, 29	3/25, 27, 4/3	3/25, 26, 28, 29
Total Catch	**23**	**1**	**7**	**15**	**116**
FR		1	4	7	102
WR	12				1
SR			2	8	4
LFR					
Ad-Clipped Chinook	2				
DS	1 (no expression)				
Splittail	3				8

Longfin	3 (1 w/eggs)				
SH (ad-clip)	2		1		1
SH (wild)					
W. Temp. (avg. °F)	58.6	57.4	63.0	56.8	59.9
Flows (avg. cfs)				7510	
Turbidity (avg. NTU)	45.1	9.4	11.2	11.4	61.0
WR/LFR Avg. CPUE					
FR/SR Avg. CPUE				0.15	

Key: FR = Fall run; LFR = Late-fall run; SR = Spring run; WR = Winter run; SH = Steelhead; DS = Delta smelt; LFS = Longfin smelt; CPUE = catch per unit of effort; ACT = acoustic tag; N/A = not available

Fish Salvage: Geir Aasen (DFW) provided the fish salvage report covering 3/25–4/1/13 and emailed it to DOSS participants. This report is posted at ftp://ftp.delta.dfg.ca.gov/salvage and you can locate the table under folder "DOSS salvage tables" (also try http://www.dfg.ca.gov/delta/apps/salvage/Default.aspx and click on "salvage FTP site").

Report from Fujimura (DFW) for March 25–31, 2013

The numbers of salvaged steelhead last week decreased slightly from the previous week. Non-ad-clipped steelhead were salvaged daily; 149 were salvaged during this reporting period. The estimated daily loss densities ranged from 2.12 to 6.68 fish/TAF. The first-stage loss trigger of 8 fish/TAF was exceeded on 4/1/13 with 8.30 fish/TAF. The season-to-date (10/1 to 4/1) total of salvaged non-ad-clipped steelhead is 430. Ninety-five ad-clipped steelhead were also salvaged during the reporting period.

The weekly total of non-ad-clipped older juvenile Chinook salvaged increased slightly compared to the previous week. One hundred thirty-three non-ad-clipped juvenile Chinook salmon were salvaged of which 88 were spring-run size, 32 were in the winter-run size range, and 13 were in the fall-run size range. Daily loss densities of older juvenile salmon ranged from 0.36 to 4.01 fish/TAF from 3/25 through 3/29/13, and 0 from 3/30 to 3/31. The loss density for 4/1/13 was 1.02 fish/TAF.

The number of ad-clipped Chinook salvaged was the same as the previous week. Twelve ad-clipped juvenile Chinook were salvaged; all were in the winter-run size range. The minimum winter-run length as of 4/2/13 is 122 mm. One ad-clipped Chinook from 3/25 was confirmed as the first hatchery winter-run by the coded wire tag (CWT) and one ad-clipped from 3/27 was a late-fall run.

No sturgeon were observed last week.

Preliminary data from Tuesday, 4/2/13: There was no salvage at the CVP because of the planned shutdown for maintenance. At the SWP, 13 non-ad-clipped steelhead and 4 ad-clipped steelhead (all sutured) were salvaged. Eight non-ad-clipped juvenile Chinook were salvaged at the SWP, 5 of which were fall-run and 3 of which were spring-run size. Of the fish salvaged, 13 (all the Chinook and a large number of steelhead) salvaged on Tuesday were collected during a predator flush (cleaning of the secondaries) at 12:00 p.m. Salvage of the fish during the flush did not need to be expanded. A preliminary estimate for yesterday's steelhead loss density is 19.33

fish/TAF, which exceeds the second-stage trigger of Action IV.2.3. The loss density is high because the pumping rate is so low relative to the number of fish lost.

Sutured Fish: Last year, some sutured fish were caught at the Mossdale trawls and DFW is studying these instances with the help of data from the 6-year study to try to get a better of idea of fish movement vs. flow. There should be some data for the Mossdale trawl on this within the next few years when the Mossdale report is written. If ad-clipped steelhead are being caught now, they must be from someone else's releases or studies (possibly strays from hatchery releases). Reclamation's 6-year-study releases of sutured steelhead were on 3/3, 3/4, and 3/5/13, so any sutured fish seen at the facilities would have been remaining in the Delta for a month. Previous studies by Kevin Clark, DWR, showed that once steelhead get into Clifton Court Forebay, they can survive there for a long period of time.

Steelhead Exceedance of First-Stage Trigger under RPA Action IV.2.3: The first-stage trigger (8 fish/TAF) was exceeded on 4/1/13 (8.3 fish/TAF) . Yip (NMFS) notified WOMT yesterday that day 1 of the minimum 5-day action response was 4/2/13. The action response requires that the last 3 consecutive days of the action be below the loss-density triggers. The second-stage trigger (12 fish/TAF) was exceeded on Tuesday, 4/2/13, and WOMT will be alerted at this afternoon's WOMT meeting through today's DOSS update. The second-stage action response calls for -2,500 cfs OMR flow; however, because the daily OMR flow is positive right now and the projects are at minimum pumping (1,500 cfs), today, 4/3, is day 1 of the action response. During the call, Fujimura asked Aasen (DFW) to calculate the loss density from the second-stage exceedance; Fujimura reported it to be 19.33 fish/TAF.

Compiled by Bob Fujimura on April 2, 2013

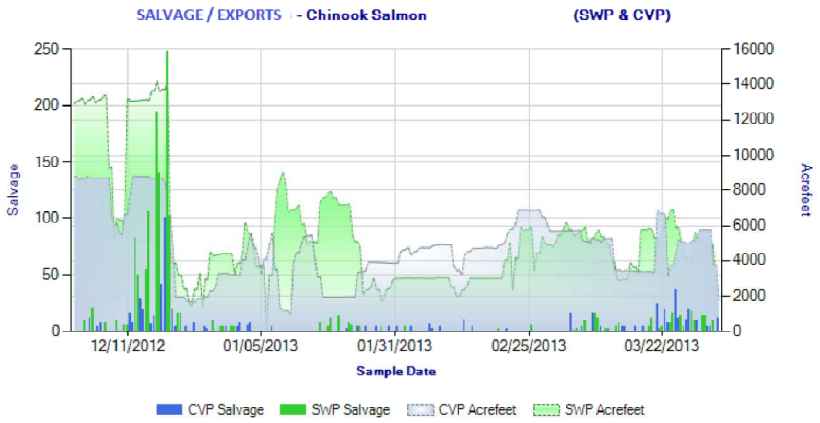


Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during December 1, 2012 through April 1, 2013. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx.

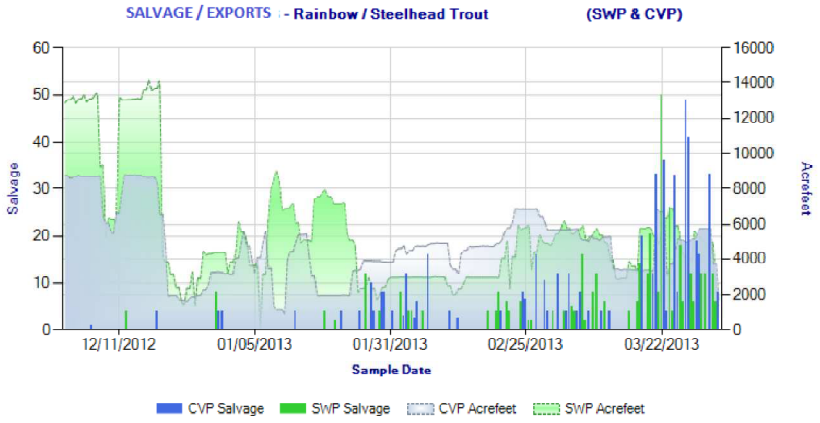


Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during December 1, 2012 through April 1, 2013. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx

DOSS Weekly Salvage Update
Reporting Period: March 25-31, 2013
Prepared by Bob Fujimura on April 2, 2013
Preliminary Results -Subject to Revision

Criteria	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar	Trend	
Loss Densities									
Wild older juvenile CS	4.01	1.95	0.36	2.47	0.82	0	0	↗↘	1.4
Wild steelhead	6.27	2.12	6.68	2.27	5.30	2.43	5.85		4.4
Exports									
SWP daily export	4,929	4,224	3,959	5,591	5,049	4,938	4,864	→	4,793
CVP daily export	5,174	4,992	4,988	5,345	5,774	5,760	5,764		5,400

Loss Density = fish lost/TAF; water export = AF; Trend = compared to previous week; wild = adipose fin present
Loss = estimated number of fish lost at the CVP and SWP Delta export facilities based on estimated salvage (see below)

Chinook Salmon Weekly/Season Salvage and Loss
Combined salvage and loss for both CVP and SWP fish facilities
Race determined by size at date of capture; hatchery = adipose fin missing;

		Weekly Total			Season Total	
Category		Salvage	Loss	Trend	Salvage	Loss
Wild						
	Winter Run	32	97	↗	263	711
	Spring Run	88	275	↗	142	331
	Late Fall Run	0	0	→	85	277
	Fall Run	13	9	↘	86	208
	Unclassified	0	0	→	8	5
	Total	**133**	**381**		**584**	**1,532**
Hatchery						
	Winter Run	12	24	↘	181	566
	Spring Run	0	0	→	0	0
	Late Fall Run	0	0	→	781	2,898
	Fall Run	0	0	→	415	1,522
	Unclassified	0	0	→	0	0
	Total	**12**	**24**		**1,377**	**4,986**

Trend = weekly loss per race; Salvage = estimated number of fish collected by the CVP and SWP fish protective facilities per unit of time

Steelhead Weekly/Season Salvage and Loss
Combined salvage and loss for both CVP and SWP fish facilities

	Weekly Total			Season Total	
Category	Salvage	Loss	Trend	Salvage	Loss
Wild	149	313	↘	424	1,031
Hatchery	95	138	↘	463	950
Total	**244**	**451**		**887**	**1,981**

State Water Project loss = salvage x 4.33; Central Valley Project loss = salvage x 0.68

Hatchery CWT Results (3/25/13 through 4/1/13, see table below): There was an increase in loss from the second spring-run surrogate group to 0.176% and an increase in loss for the third spring-run surrogate group to 0.029%. The first winter-run hatchery Chinook was seen on 3/25/13 for a loss of 0.005%. The CWT that was misplaced last week and later found was from the last water year; therefore, it is difficult to match it to a specific fish release. The cumulative percentage loss for these hatchery groups are based off the number released per group.

The unassigned CWT reported last week remains unassigned to a salvage record. There is difficulty assigning this CWT to an ad-clipped Chinook observed in a salvage count at the SWP because the preliminary CWT reading shows that the CWT was from the Coleman National Fish Hatchery late-fall-run production group from the last water year. None of the lost CWTs from the SWP could be matched with this CWT with certainty based on the hatchery release information from the lost and found CWT; however, this lost and found CWT still needs to be re-read.

CONFIRMED HATCHERY (ADIPOSE FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2012/2013

Release Date	CWT Race	Hatchery	Release Site	Release Type	Confirmed Loss	Number Released[1]	Total Entering Delta	% Loss of Number Released[2]	% Loss of Total Entering Delta[3]	First Concern Level	Second Concern Level	Date of First Loss	Date of Last Loss
11/5/2012	F	Mokelumne River Hatchery	Mokelumne River	**	590.68	100,633	n/a	0.587	n/a	n/a	n/a	12/5/2012	1/20/2013
11/29/2012	LF	Coleman NFH	Battle Creek	Production	4080.76	805,842	n/a	0.506	n/a	n/a	n/a	12/9/2012	1/20/2013
12/10/2012	LF	Coleman NFH	Battle Creek	Spring Surrogate	74.95	72,974	n/a	0.103	n/a	0.5%	1.0%	12/31/2012	3/23/2013
1/8/2013	LF	Coleman NFH	Battle Creek	Spring Surrogate	138.70	79,000	n/a	0.176	n/a	0.5%	1.0%	1/20/2013	3/27/2013
1/25/2013	LF	Coleman NFH	Battle Creek	Spring Surrogate	24.80	85,600	n/a	0.029	n/a	0.5%	1.0%	2/3/2013	3/31/2013
2/7/2013	W	Livingston Stone NFH	Caldwell Park	Production	8.59	182,662	96,525	0.005	0.009	0.5%	1.0%	3/25/2013	3/25/2013

UNCONFIRMED HATCHERY (ADIPOSE FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2012/2013

Facility	Unknown CWT Loss[4]	Unread CWT Loss[5]	Unknown Hatchery Loss[6]	Acoustic Tag Loss[7]	Number of Unassigned CWTs[8]
SWP	45.16	0.00	0.00	17.93	1
CVP	5.20	0.00	0.00	0.00	0
TOTAL	**50.36**	**0.00**	**0.00**	**17.93**	**1**

SWP and CVP adipose fin clipped Chinook lost from 10/1/2012 through 4/1/2013.
These tables do not account for adipose fin clipped Chinook observed from a special study since salvage and loss for Chinook observed in a special study= 0.
[1]Number released with the adipose fin clipped and a CWT.
[2]% Loss of Number Released = (Confirmed Loss/Number Released)*100.
[3]% Loss of Total Entering Delta= (Confirmed Loss/Total Entering Delta)*100.
[4]Adipose fin clipped Chinook was observed during fish count, but tag code could not be determined (e.g., damaged tag, lost tag, no tag, or Chinook accidentally released).
[5]Adipose fin clipped Chinook was collected during fish count and has not been processed yet.
[6]CWT has been read, but hatchery release information not yet available.
[7]Adipose fin clipped Chinook released due to presence of sutures.
[8]CWT cannot currently be assigned to a salvage record with certainty since the CWT was lost and then found. CWT may be assigned to a salvage record if new information is available.
** Information not yet available.

DWR-DES Revised 4/2/2013
Preliminary data from DFW, DWR, FWS, and Reclamation; subject to revision.

Operations (4/3/13)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	1,500	Jones Pumping Plant	0 (through 4/14)
Reservoir Releases (cfs)			
Feather - Oroville	4,000 (started on Sunday and DWR is reassessing whether this much water is needed in the system.)	American - Nimbus	1,250 (possible reduction but waiting for forecast and Chipps days after 4/17/13)
		Sacramento - Keswick	5,800
		Stanislaus - Goodwin	200
Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	521	San Luis (CVP)	778
Oroville	2,995	Shasta	3,783
New Melones	1,553	Folsom	611
Delta Operations			
DCC	Closed	Sacramento River at Freeport (cfs)	15,381
Outflow Index (cfs)	19,500	San Joaquin River (cfs) at Vernalis	1,583
Total Delta Inflow (cfs)	18,256	OMR (daily) (cfs)	+200 (reflecting reductions in pumping)
Water Temperature (°F)		OMR 5-day avg (cfs)	-3,389
X2 (km)	79 (east of Chipps Island)	OMR 14-day avg (cfs)	-3,729
E/I (%)	9.4 (14-d avg)		

The SWP is picking up all of the export pumping (1,500 cfs inflow at Clifton Court Forebay) while Jones Pumping Plant is down for maintenance, and will remain at that level to meet the Action IV.2.1 I:E ratio of 1:1 with Vernalis flows. This is also the minimum level for health and safety reasons.

Weather: Another storm system is coming tomorrow; however, there will most likely be less precipitation than that from the storm system last week. The storm system coming after this one is smaller with even less precipitation. The next 20 days after these systems are predicted to be dry.

Stanislaus Releases: No increases are scheduled yet. The NMFS biological opinion Appendix 2-E flow schedule will be adjusted depending on the Stanislaus Operations Group advice this week; however, all indications are that the purchase/transaction by the San Luis & Delta Mendota Water Authority from the Oakdale Irrigation District is moving forward (water districts approved on 4/2). Releases could (but this is not confirmed) begin as soon as this coming weekend (4/6/13) because all the approvals from water boards and environmental documentation are scheduled to be done this week, and the agreement could be signed by Friday. Supplemental releases would not begin until all parties have signed the agreement. The additional flows are not likely to show up at Vernalis until Monday, 4/8/13, at the earliest.

Smelt Working Group (SWG): SWG recommended that OMR could be set at no more negative than -5,000 cfs on a 14-day average and that these flows would be adequately protective of both delta and longfin smelt. A determination from FWS has not yet been issued but it is presumed that FWS will support SWG's recommendation. One delta smelt was observed at the Delta fish facilities last week, which was expanded to 4 salvaged. SWG does not expect that the incidental take limit will be exceeded at this point because the delta smelt season is basically over and adult delta smelt salvage is below the concern level (i.e., 75% of the incidental take limit). No larval young-of-year delta smelt were seen at either fish facility last week.

I:E Ratio (Action IV.2.1): DWR had asked NMFS for clarification on how to operate to the I:E ratio under Action IV.2.1 when, within the 14-day averaging period, Vernalis inflow is so low that the projects cannot meet the required ratio without going below the minimum combined "health & safety" export level of 1,500 cfs.

NMFS responded by email on 4/1/13 as follows: "When calculating the 14-day running average of the I:E ratio, operating to the minimum combined export level of 1,500 cfs on a daily basis will be considered equivalent to operating to the target I:E ratio required under Action IV.2.1."

Yip added that the formula for calculating the 14-day I:E average is described on page 31 of the 2011 DOSS annual report, which also describes the appropriate format for reporting I:E during April and May.

Action IV.2.1 provides for an exception procedure for health and safety. In addition to allowing minimum combined exports of 1,500 cfs, it states that Reclamation and DWR may submit a plan to NMFS by 2/28 of a given year if they are not able to meet the I:E ratio and provide for health and safety. No plan has been submitted so far. Such a plan would show how the projects will maximize benefits to fish and demonstrate to NMFS all opportunities for purchasing water upstream using CVPIA, B3 water, or other water purchasing authority. If a plan is to be submitted, it will most likely be a joint effort between DWR and Reclamation. It is a good idea

for the projects to consider submitting a plan even though they are not "required" to do so under the RPA because the Vernalis flows are predicted to be < 1,500 cfs.

The 1:1 ratio in the Vernalis flow table on Page 70 of the 2011 amended RPA refers to critically dry years and to footnote 12, which specifies that the minimum combined CVP/SWP exports is 1,500 cfs for health and safety.

DOSS discussed other possible actions to minimize steelhead losses at the SWP under low export rates, such as opening the radial arm gates when steelhead were not present based on timing at the CVP. If there are two RPA actions already in place, it seems as though we are following the I:E ratio and mitigating the potential increase in steelhead that would otherwise occur if not implementing the ratio. We are doing this with the expectation that the presence of steelhead during this period would be fairly high.

It was noted that Actions IV.2.1 and IV.2.3 are independent of each other. The fact that Action IV.2.1 is currently being implemented does not preclude a trigger of Action IV.2.3 being met. In the current situation, the action response for the second-stage trigger in Action IV.2.3 did not warrant a change in operations. Implementation of the action response is consistent with and in compliance with the RPA, and minimizes the loss of steelhead, despite the fact that there continues to be a relatively high loss of steelhead.

DWR uses the previous day's Vernalis flow data, which is the standard procedure used in D-1641. DOSS agreed that the previous day's Vernalis flow data should be used in the implementation of Action IV.2.1, and will advise WOMT and NMFS.

Action IV.3 Language Clarifications per the March 12, 2013, DOSS Notes: Yip noted that the DOSS notes from 3/12/13 (page 14) state that DOSS will provide advice to WOMT and NMFS and that DOSS did not do that; therefore, there was no official "endorsement" of the Action IV.3 language clarifications from either WOMT or NMFS. DOSS must ensure that it has approval from management on these language changes (see DOSS advice below).

DOSS Advice to WOMT and NMFS:
1) The second-stage trigger for Action IV.2.3 was exceeded yesterday, 4/2, with a steelhead loss density of 19.33 fish/TAF. Steelhead loss density was greater than 12 fish/TAF, requiring an action response of OMR flows no more negative than -2,500 cfs for 5 days. The action can be relaxed after 3 consecutive days (last 3 days) of below 12 fish/TAF (2nd stage), or below 8 fish/TAF (first stage) with a minimum 5-day action response. The most recently reported daily OMR flow was positive and the projects are pumping a combined minimum 1,500 cfs; therefore, the projects are meeting this action response.

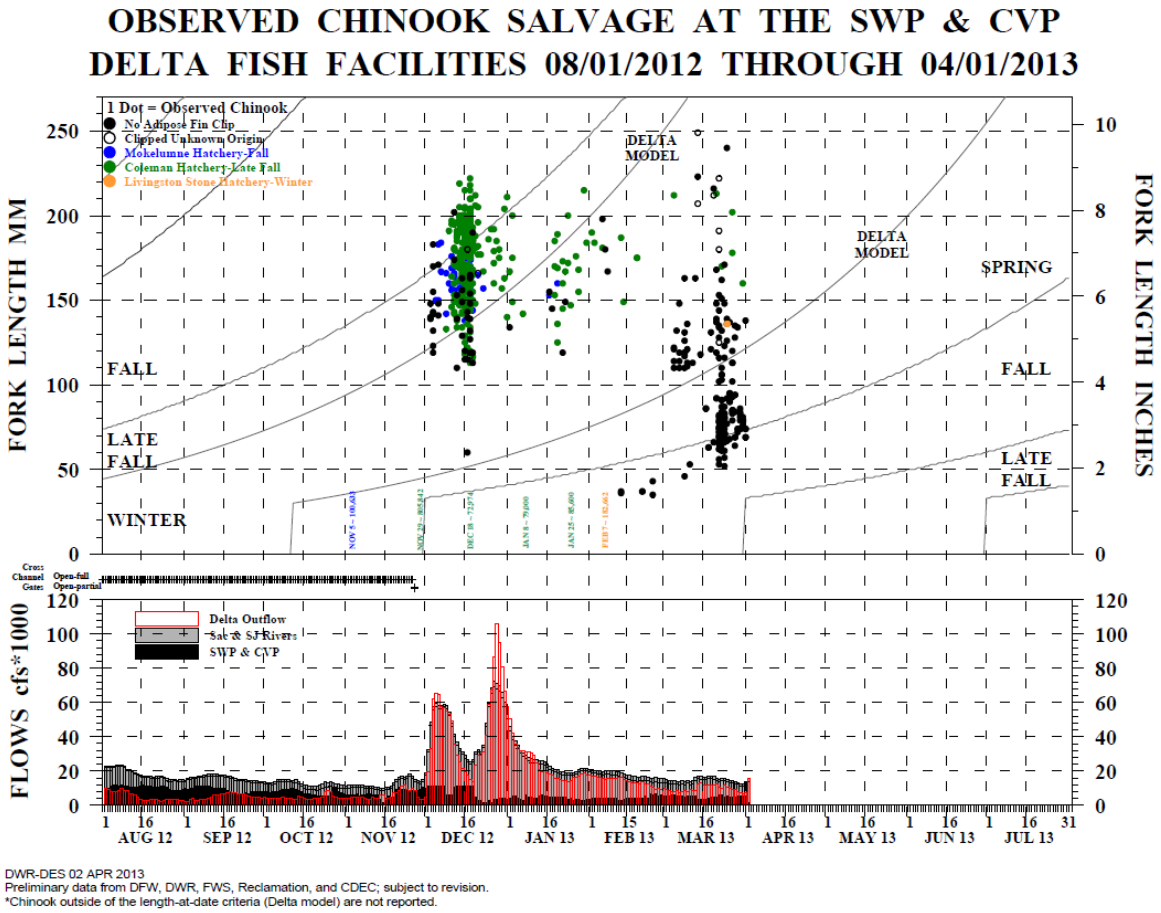
2) Beginning 4/1, the projects were operating to Action IV.2.1 (San Joaquin River Inflow-to-Export ratio). That ratio is 1:1 this year because of the critically dry conditions in the San Joaquin Valley. The projects are at the minimum combined CVP and SWP exports required for health and safety (1,500 cfs). DOSS advises that the previous day's 24-hour period flow at Vernalis be used to determine the 1:1 ratio. DOSS also advises that the projects consider submitting a plan to NMFS to maximize fish benefits, if the 1,500 cfs flow at Vernalis cannot be met. Such a plan must demonstrate that all opportunities to purchase water in the San Joaquin Basin have been exhausted.

3) Final clarification language for Action IV.3 (reduce the likelihood of entrainment at the

salvage facilities) was sent to WOMT and NMFS on 3/26. DOSS advises that these clarifications be accepted beginning next water year (from 11/1/13 through 12/31/13).

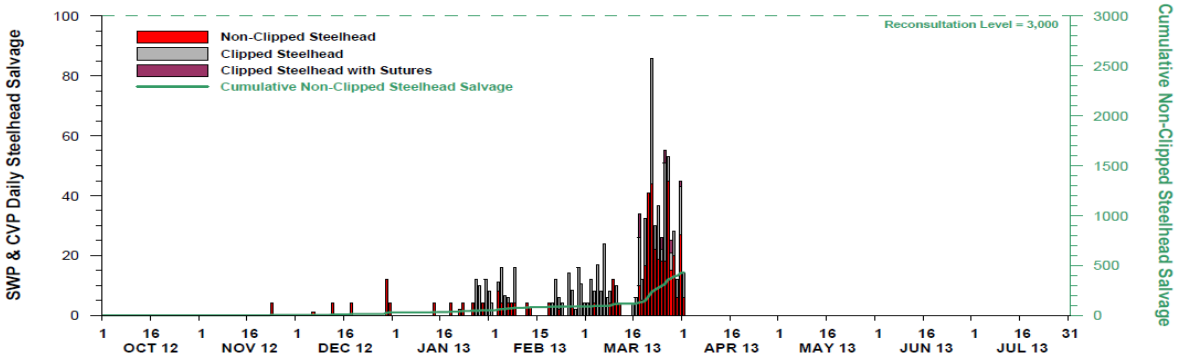
Next Meeting: The next DOSS conference call is scheduled for 4/9/13, at 9:00 a.m.

Below are graphs provided by DWR for Chinook salmon and steelhead salvaged or lost at the Delta fish facilities and observed in the Sacramento and San Joaquin rivers. For additional graphs, please visit the DWR website at: http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm.



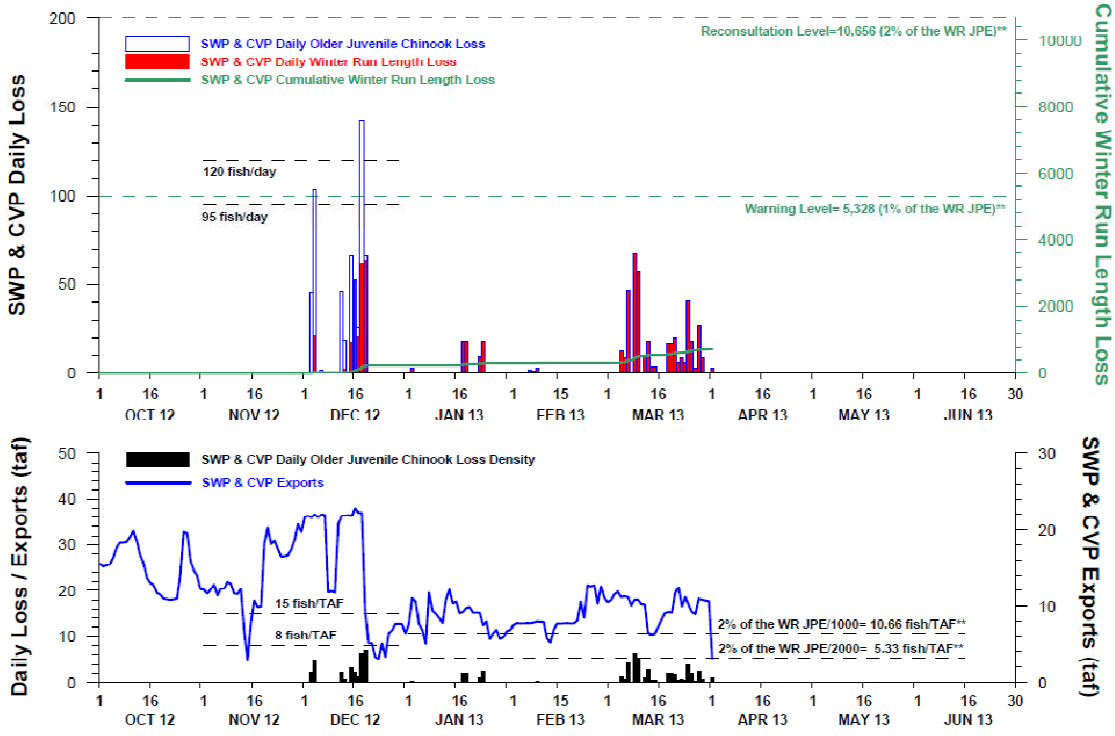
DWR-DES 02 APR 2013
Preliminary data from DFW, DWR, FWS, Reclamation, and CDEC; subject to revision.
*Chinook outside of the length-at-date criteria (Delta model) are not reported.

STEELHEAD SALVAGE AT THE DELTA FISH FACILITIES 01 OCT 2012 THROUGH 01 APR 2013



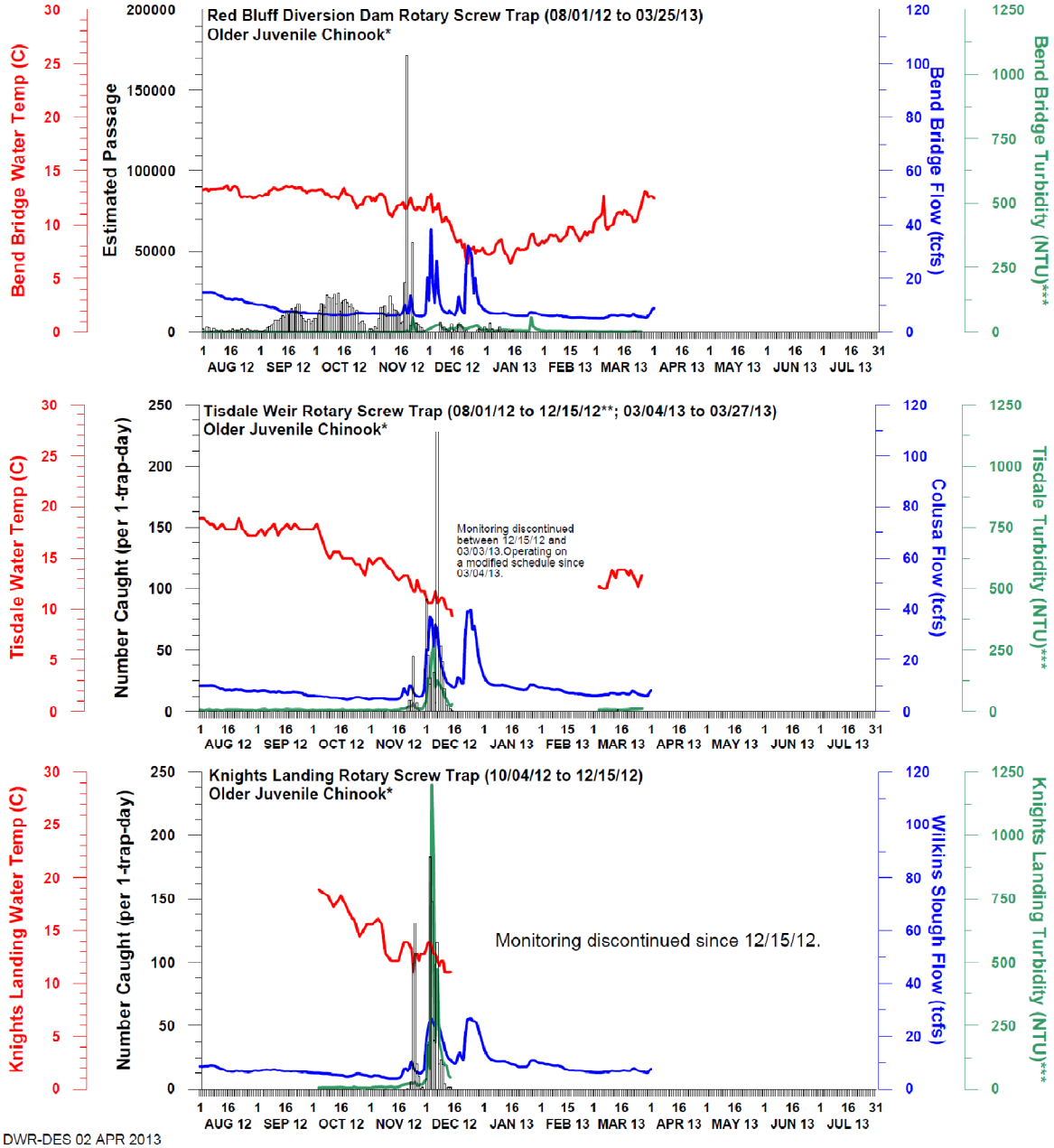
DWR-DES 02 APR 2013
Preliminary data from DFW; subject to revision.

NON-CLIPPED WINTER RUN & OLDER JUVENILE CHINOOK LOSS AT THE DELTA FISH FACILITIES 01 OCT 2012 THROUGH 01 APR 2013



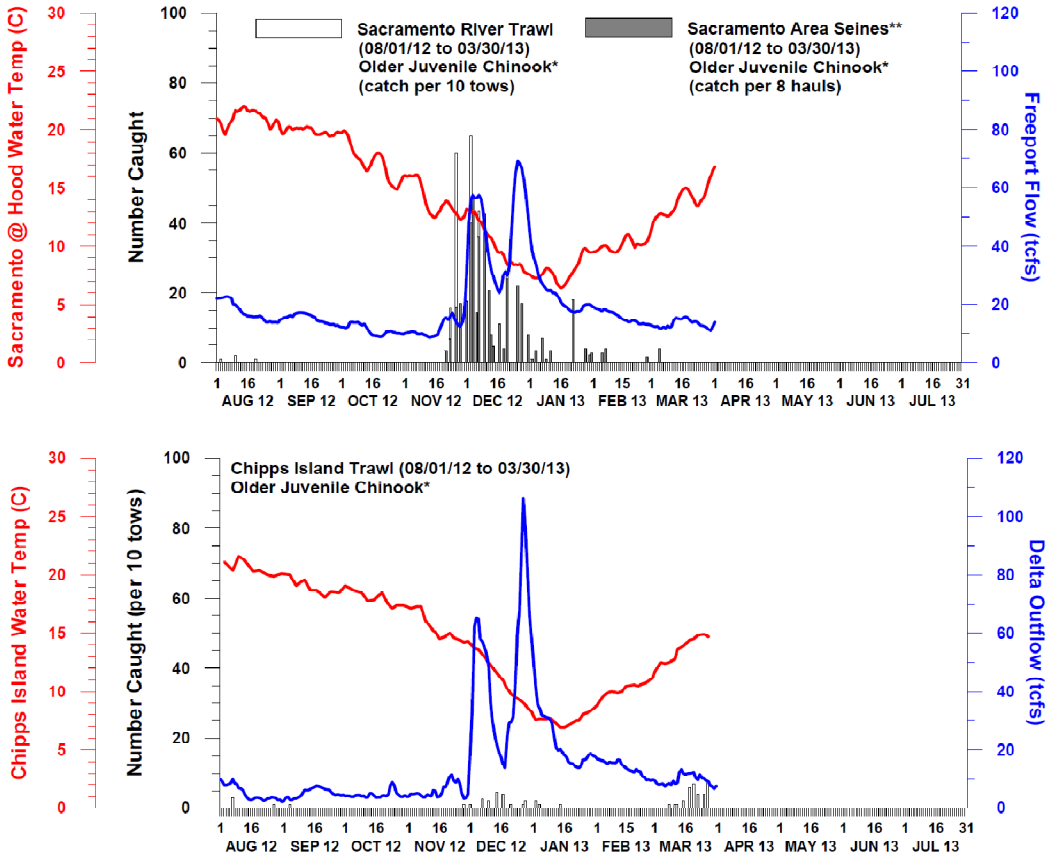
DWR-DES 02 APR 2013
Preliminary data from DFW; subject to revision.
*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Delta model).
**Based on the final juvenile production estimate (JPE), which comes out to be about 532,809 non-clipped winter run (WR) Chinook entering the Delta during water year 2013.

NUMBER OF OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



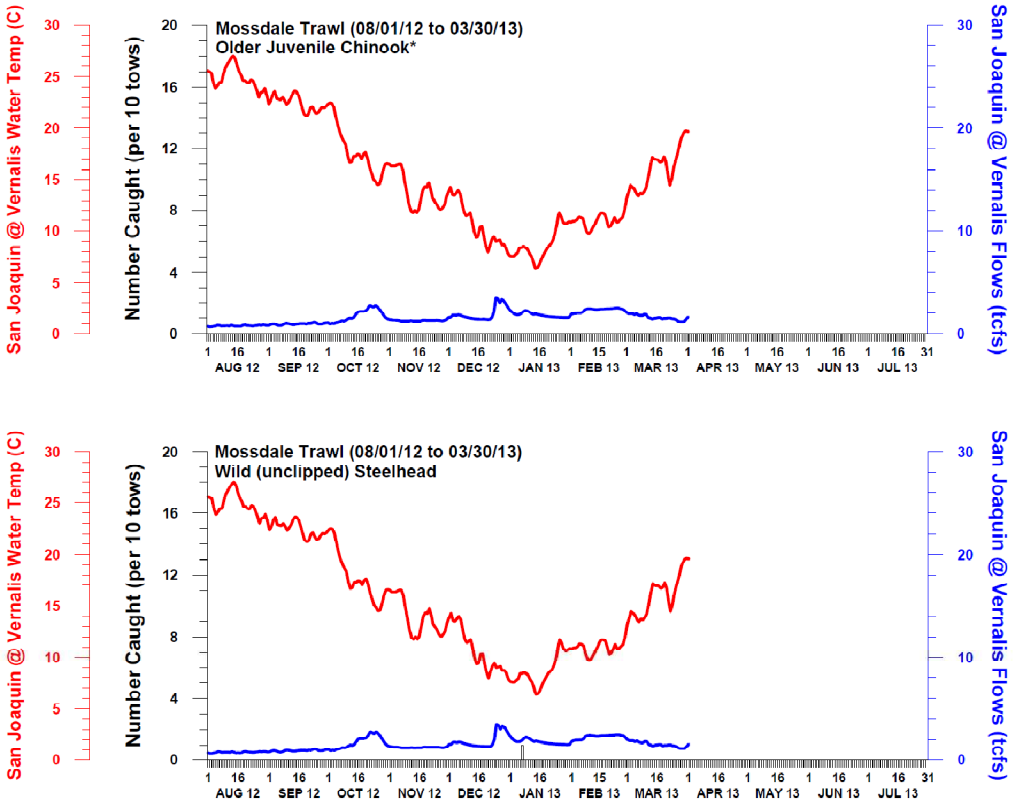
DWR-DES 02 APR 2013
Preliminary data from DFW, FWS, and CDEC; subject to revision.
*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).
** Tisdale Weir: One older juvenile caught on 9/14 and 43 older juveniles caught on 11/25. However, CPUE was not calculated due to problems with the cone clickers. As a result, data are not presented on the graph.
***Turbidity is a discrete measurement and is not measured continuously. Therefore, data are interpolated on days when turbidity was not measured.

NUMBER OF OLDER JUVENILE CHINOOK MEASURED IN THE LOWER SACRAMENTO RIVER & CHIPPS ISLAND



DWR-DES 02 APR 2013
Preliminary data from FWS and CDEC; subject to revision.
*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).
**Sacramento area seine route consists of the following seine sites: Verona, Elkhorn, Sand Cove, Discovery Park, American River, Miller Park, Sherwood Harbor, and Garcia Bend. Bars are stacked if Chinook caught from the trawl and seines are from the same day.

NUMBER OF OLDER JUVENILE CHINOOK AND STEELHEAD MEASURED IN THE SAN JOAQUIN RIVER



DWR-DES 02 APR 2013
Preliminary data from FWS and CDEC, subject to revision.
*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).